

WHAT IS CLAIMED IS:

1. A sliding door apparatus comprising:

a sliding door having a window and slidably disposed with respect to a body of a vehicle, the window having an opening/closing member that opens or closes the window to form an open area and a closed area in the window, the sliding door having a full-open position and an opening direction;

a foreign object detecting unit that detects whether a foreign object exists in the open area; and

a slide stopping unit that stops, upon the foreign object detecting unit detecting existence of the foreign object in the open area, sliding of the sliding door in the opening direction before the sliding door reaches the full-open position.

2. The sliding door apparatus according to claim 1, wherein the opening/closing member is a window glass.

3. The sliding door apparatus according to claim 1, wherein the foreign object detecting unit includes an optical detector that optically detects the existence of the foreign object.

4. The sliding door apparatus according to claim 3, wherein the optical detector includes

a light emitting unit that is arranged at one side of the window to emit light across the window; and

a light detecting unit that is arranged at other side of the window to detect the light emitted.

5. The sliding door apparatus according to claim 1, wherein the
5 slide stopping unit includes

a stopping member that is pivotably provided on the sliding door, the stopping member having a retracted position and a protruded position; and

- an abutting portion that is provided on the body, wherein
10 when the slide stopping unit is not activated, the stopper member is kept at the retracted position, and

when the slide stopping unit is activated, the stopper is set to a protruded position to get stuck on the abutting portion.

- 15 6. The sliding door apparatus according to claim 1, wherein the slide door has an arrangement to open or close the slide door manually.

7. The sliding door apparatus according to claim 1, further comprising:

- 20 an open/close switch that outputs a signal to open or close the slide door; and

an electric actuator that drives the slide door based on the signal.

- 25 8. The sliding door apparatus according to claim 7, wherein upon

the foreign object detecting unit detecting existence of the foreign object in the open area, the slide stopping unit provides a control on the open/close switch in such a manner that the open/close switch outputs a signal that indicates the slide door not to be opened.

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9. The sliding door apparatus according to claim 1, further comprising a window state detecting unit that detects width of the open area and outputs a detection signal when the width is more than a predetermined value, wherein

10 upon receiving the detection signal, the foreign object detecting unit detects whether a foreign object exists in the open area.

10. The sliding door apparatus according to claim 9, wherein the predetermined value is 0 millimeter.

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